AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application. The following listing provides the amended claims with the amendments marked with deleted material crossed out and new material underlined to show the changes made.

1. (Currently Amended) A method of specifying speed effects for playing a video clip, the method comprising:

a) receiving a set of speed effects for the video clip through a set of modifications of a user selectable, directly deformable graph that represents a playback-time in relation to a content-time of the video clip, wherein said modifications are made directly to the graph; and

b) displaying in real-time a presentation of the video clip that accounts for the set of speed effects defined for the video clip.

2. (Previously Presented) The method of claim 1, wherein the set of speed effects comprises only one speed effect.

3. (Previously Presented) The method of claim 1, wherein the set of speed effects comprises a plurality of speed effects that specify a plurality of playback speeds for a plurality of intervals.

4. (Currently Amended) The method of claim 1, wherein said ~~further comprising:~~

~~receiving~~ the set of speed effects comprises:

receiving user input that indicates a direct modification of the graph from an electronic user input device; and ~~user input regarding speed effects;~~

defining the set of speed effects, wherein said defining the speed effects comprises converting the input from the electronic user input device into a set of speed effect definitions.

5. (Currently Amended) The method of claim 4, wherein said receiving the input from the electronic user input device comprises[[:]]

~~a) providing a graph that represents a playback time of the video clip in relation to a content time of the video clip;~~

~~b) allowing the user to~~ monitoring the location of a cursor controlled by the electronic user input device and the status of buttons of the electronic user input device ~~modify the speed effects by modifying the graph~~.

6. (Currently Amended) The method of claim 5, wherein ~~allowing the user to~~ the direct modification of ~~modify~~ the graph comprises receiving a selection, from the electronic user input device, of ~~allowing the user to select~~ a portion of the graph that appears at a first location within a window containing the graph and [[to]] receiving an input from the electronic user input device commanding a movement of ~~move~~ the selected portion to a second location within the window.

7. (Original) The method of claim 1, wherein said displaying comprises displaying the video presentation without rendering the presentation to a data storage.

8. (Original) The method of claim 7 further comprising:

after specifying the speed effects for the video clip, rendering the video clip to a data storage.

9. (Currently Amended) The method of claim 1, wherein the video clip comprises a plurality of frames, wherein said displaying comprises:

a) selecting a first frame for display at a first playback time;

b) displaying the first frame for display at the first playback time;

c) selecting a second frame for display at a second playback time, wherein the selection of the second frame is based at least partly on the set of speed effects; and

d) displaying the second frame for display at the second playback time.

10. (Currently Amended) The method of claim 1, wherein the video clip comprises a plurality of frames, wherein said displaying comprises:

a) selecting a first frame for display for a first playback duration based on the defined set of speed effects;

b) displaying the first frame during the first playback duration;

c) selecting a second frame for a second playback duration based on the defined set of speed effects; and

d) displaying the second frame during the second playback duration.

11. (Previously Presented) The method of claim 10 further comprising:

a) before displaying the first frame, decompressing the first frame; and

b) before displaying the second frame, decompressing the second frame.

12. (Previously Presented) The method of claim 1, wherein the video clip comprises a composite of a plurality of video clips.

13. (Previously Presented) The method of claim 12, wherein the video clip comprises at least one audio track.

Claims 14-15 (Canceled)

16. (Currently Amended) A computer readable medium storing a computer program for specifying speed effects for playing a video clip, said computer program for execution by at least one processor, the computer program comprising ~~sets of instructions for~~:

a) a set of instructions for defining a set of speed effects for the video clip;

b) a set of instructions for displaying in real-time a presentation of the video clip that accounts for the set of speed effects defined for the video clip;

c) a set of instructions for providing a graph that represents a playback-time

of the video clip in relation to a content-time of the video clip;

d) a set of instructions for ~~allowing the user to modify the graph by~~ receiving user inputs of modifications directly to the graph; and

e) a set of instructions for converting the user inputs of direct modifications of the graph into a set of speed effects.

17. (Original) The computer readable medium of claim 16, wherein the set of instructions for allowing the user to modify the graph comprises a set of instructions for allowing the user to select a portion of the graph that appears at a first location within a window containing the graph and to move the selected portion to a second location within the window.

18. (Previously Presented) The computer readable medium of claim 16, wherein the set of instructions for displaying comprises a set of instructions for displaying the video presentation without rendering the presentation to a data storage.

19. (Currently Amended) The computer readable medium of claim 16, wherein the video clip comprises a plurality of frames, wherein the set of instructions for displaying comprises ~~sets of instructions for~~:

a) a set of instructions for selecting a first frame for display at a first playback time;

b) a set of instructions for displaying the first frame for display at the first playback time;

c) a set of instructions for selecting a second frame for display at a second playback time; and

d) a set of instructions for displaying the second frame for display at the second playback time.

20. (Currently Amended) A graphical user interface ("GUI") method for specifying

speed effects for a video presentation, the method comprising:

a) ~~as part of the GUI, providing~~ displaying a GUI graph of a playback-time of the video presentation relative to a content-time of the video presentation; and

b) ~~allowing a user to specify~~ accepting user input that determines a speed effect for the video presentation by a selection ~~selecting~~ and direct modification of ~~modifying~~ a portion of the graph through a GUI drag operation.

21. (Previously Presented) The method of claim 20 further comprising providing a set of controls for selecting portions of the graph and performing drag operations.

22. (Previously Presented) The method of claim 20, wherein the graph is defined along at least:

a) a playback-time axis that represents time during a playback; and

b) a content time axis that represents time within the video presentation.

23. (Previously Presented) The method of claim 22, wherein the selected portion of the graph comprises a keyframe.

24. (Original) The method of claim 23, wherein at any time, the keyframe has a value along the playback-time axis and a value along the content-time axis, wherein when the keyframe is selected, the keyframe has a first content-time value, the method further comprising:

when the keyframe is selected, displaying a frame that appears in the video presentation at the first content-time value.

25. (Currently Amended) The method of claim 24 further comprising:

~~when the content-time value of the keyframe changes during a drag operation,~~ displaying the frame, in the video presentation, that corresponds to the content-time value of the keyframe when the content-time value of the keyframe changes during a drag operation.

26. (Previously Presented) The method of claim 25 further comprising:

displaying a graphical representation of the video presentation when the keyframe is selected,

wherein said performing the drag operation comprises moving the graphical representation along the playback-time axis when the drag operation is along the playback-time axis.

27. (Currently Amended) The method of claim 26, wherein said performing the drag operation further comprises moving the keyframe along the content-time axis when the drag operation is along the playback-time axis.

28. (Currently Amended) The method of claim 24, wherein said performing [[a]] the drag operation comprises moving the keyframe along the playback-time axis when:

a) the drag operation is along the playback-time axis; and

b) ~~the user is pressing~~ a particular keyboard key is pressed.

29. (Currently Amended) The method of claim 24, wherein said performing [[a]] the drag operation comprises moving the keyframe along the content-time axis when:

a) the drag operation is along the playback-time axis; and

b) ~~the user is not pressing~~ a particular key on the keyboard is not pressed.

30. (Currently Amended) The method of claim 25, wherein said performing the drag operation comprises moving the keyframe along the playback-time axis when the drag operation is along the playback-time axis.

31. (Currently Amended) The method of claim 25, wherein said performing the drag operation further comprises moving the keyframe along the content-time axis when the drag operation is along the content-time axis.

32. (Currently Amended) The method of claim 25 further comprising:

displaying a graphical representation of the video presentation when the keyframe is selected,

wherein said performing the drag operation comprises

a) moving the keyframe along the content-time axis when the drag operation is along the content-time axis; and

b) moving the graphical representation along the playback-time axis when the drag operation is along the playback-time axis.

33. (Previously Presented) The computer readable medium of claim 16, wherein said computer program further comprises a set of instructions for generating a set of blended frames from at least two frames of said video clip.

34. (Currently Amended) The computer readable medium of claim 33, wherein said set of instructions for generating said set of blended frames comprises ~~instructions for~~:

a) a set of instructions for multiplying a first frame by a first blending parameter;

b) a set of instructions for multiplying a second from by a second blending parameter; and

c) a set of instructions for adding the result of said multiplying together to produce a blended frame.

35. (Previously Presented) The computer readable medium of claim 34, wherein said computer program further comprises a set of instructions for generating sequential frames of said set of blended frames by changing a magnitude of said first and second blending parameters.

36. (Previously Presented) The method of claim 20, wherein said GUI graph represents said playback-time relative to said content-time as a curve on said graph.

37. (Previously Presented) The method of claim 36, wherein said GUI graph

simultaneously shows said relationship at a plurality of points in a playback time.

38. (Currently Amended) The method of claim 28, wherein said moving the keyframe along the playback-time axis comprises moving the keyframe without changing the first content-time value, while displaying the frame, in the video presentation, that corresponds to the content-time value of the keyframe.

39. (Currently Amended) The method of claim 38, wherein said moving the keyframe further comprises setting a new playback-time value for said keyframe.

40. (Currently Amended) The method of claim 39, wherein said moving the keyframe along the playback-time axis comprises moving the keyframe without changing the first content-time value, while displaying the frame, in the video presentation, that corresponds to the content-time value of the keyframe.

41. (Currently Amended) A computer running a computer program comprising a set of instructions to implement a [[A]] graphical user interface ("GUI") comprising:

~~a)~~ a display area for displaying a video presentation; and

~~b)~~ a selectable GUI graph representing a playback-time of the video presentation relative to a content-time of the video presentation, wherein a speed effect is specified by selecting and directly modifying the graph.

42. (Currently Amended) The computer ~~GUI~~ of claim 41, wherein the GUI further comprises ~~comprising~~ a set of controls for allowing a user to modify the graph by selecting a portion of the graph and performing a GUI drag operation.

43. (Currently Amended) The computer ~~GUI~~ of claim 41, wherein the graph is defined along at least:

a) a playback-time axis that represents time during a playback; and

b) a content-time axis that represents time within the video presentation.

44. (Currently Amended) The computer ~~GUI~~ of claim 43, wherein a selected portion of the graph comprises a keyframe.

45. (Currently Amended) The computer ~~GUI~~ of claim 44, wherein the keyframe has a pair of values at each value along the playback-time axis, a playback-time value along the playback axis and a content-time value along the content-time axis, the GUI further comprising a display of a frame that appears in the video presentation at a first content-time value corresponding to a selected playback-time value.

46. (Currently Amended) The computer ~~GUI~~ of claim 45, wherein the GUI further comprises ~~comprising~~ a display of the frame in the video presentation that corresponds to the content-time value of the keyframe wherein the content of said display changes when the content-time value of the keyframe changes during a drag operation.

47. (Currently Amended) The computer ~~GUI~~ of claim 41, wherein the graph comprises a curve.

48. (Currently Amended) The computer ~~GUI~~ of claim 47, wherein a slope of a portion of the curve determines a playback speed of a corresponding portion of a content clip.

49. (Currently Amended) The computer ~~GUI~~ of claim 48, wherein a negative slope of a portion of the curve determines that the corresponding portion of the content clip is playing backward.

50. (Currently Amended) The computer ~~GUI~~ of claim 47, wherein the GUI further comprises ~~comprising~~ a set of controls for setting a curvature of said curve.

51. (Currently Amended) A computer readable medium storing a computer program for specifying speed effects for playing a video clip, said computer program for execution by at least one processor, the computer program comprising sets of instructions for:

a) providing a graphical user interface ("GUI") graph of a playback-time of

the video presentation relative to a content-time of the video presentation; and

b) accepting user inputs that ~~allowing a user to~~ specify a speed effect for the video presentation by selecting and directly modifying a portion of the graph in ~~through performing~~ a GUI drag operation.

52. (Previously Presented) The computer readable medium of claim 51, wherein the graph is defined along at least a playback-time axis that represents time during a playback and a content time axis that represents time within the video presentation.

53. (Previously Presented) The computer readable medium of claim 52, wherein the selected portion of the graph comprises a keyframe.

54. (Previously Presented) The computer readable medium of claim 53, wherein the keyframe has a value along the playback-time axis and a value along the content-time axis, wherein when the keyframe is selected, the keyframe has a first content-time value, the computer program further comprising a set of instructions for:

displaying a frame that appears in the video presentation at the first content-time value when the keyframe is selected.

55. (Previously Presented) The computer readable medium of claim 54, wherein the computer program further comprises a set of instructions for:

displaying the frame, in the video presentation, that corresponds to the content-time value of the keyframe when the content-time value of the keyframe changes during a drag operation.

56. (Currently Amended) The computer readable medium of claim 55, wherein the computer program further comprises a set of instructions for:

displaying a graphical representation of the video presentation when the keyframe is selected,

wherein a set of instructions for accepting ~~performing~~ the drag operation comprises instructions for moving the graphical representation along the playback-time axis when the drag operation is along the playback-time axis.

57. (Currently Amended) The computer readable medium of claim 56, wherein the set of instructions for accepting ~~performing~~ the drag operation further comprises instructions for moving the keyframe along the content-time axis when the drag operation is along the playback-time axis.

58. (Currently Amended) The computer readable medium of claim 55, wherein a set of instructions for ~~performing~~ accepting the drag operation further comprises instructions for moving the keyframe along the playback-time axis when the drag operation is along the playback-time axis.

59. (Currently Amended) The computer readable medium of claim 55, wherein a set of instructions for ~~performing~~ accepting the drag operation comprise instructions for moving the keyframe along the content-time axis when the drag operation is along the content-time axis.

60. (Currently Amended) The computer readable medium of claim 55, wherein the computer program further comprises ~~comprising instructions for~~:

a set of instructions for displaying a graphical representation of the video presentation when the keyframe is selected, wherein a set of instructions for ~~performing~~ accepting the drag operation comprises instructions for:

a) moving the keyframe along the content-time axis when the drag operation is along the content-time axis; and

b) moving the graphical representation along the playback-time axis when the drag operation is along the playback-time axis.

61. (Currently Amended) The computer readable medium of claim 54, wherein a set

of instructions for ~~performing~~ accepting a drag operation comprises instructions moving the keyframe along the playback-time axis when:

a) the drag operation is along the playback-time axis; and

b) ~~the user is pressing~~ a particular keyboard key is being pressed.

62. (Currently Amended) The computer readable medium of claim 54, wherein a set of instructions for ~~performing~~ accepting a drag operation comprises instructions for moving the keyframe along the content-time axis when:

a) the drag operation is along the playback-time axis; and

b) ~~the user is not pressing the~~ a particular key on the keyboard is not being pressed.

63. (Previously Presented) The computer readable medium of claim 51, wherein the set of instructions for providing said GUI graph comprises instructions for representing said playback-time relative to said content-time as a curve on said graph.

64. (Previously Presented) The computer readable medium of claim 63, wherein the set of instructions for providing said GUI graph comprises instructions for simultaneously showing said relationship at a plurality of points in a playback time.

65. (Currently Amended) A video editing system comprising:

a) a data storage medium for providing a video clip;

b) a video editing application for providing a set of speed effect settings;

c) an effects manager for:

i) receiving said set of speed effect settings from said video editing application;

ii) receiving said video clip from said data storage; and

iii) providing said video clip as individual frames to the video editing

application at a rate based on said speed effect settings.

66. (Currently Amended) The video editing application of claim 65, wherein the effects manager is further for providing two sets of frames corresponding to said video clip, wherein a first of said two sets of frames is offset in time from a second set of frames.

67. (Previously Presented) The video editing system of claim 65 further comprising a frame buffer, wherein said video editing application is for blending two frames of said two sets of frames into a blended frame and sending said blended frame to said frame buffer.

68. (New) The method of claim 1, wherein said receiving said set of modifications comprises receiving a drag operation to an end of a line that determines a slope of a part of the graph.

69. (New) The method of claim 1 further comprising displaying, in a display area, a tool for directly modifying said graph.

70. (New) The method of claim 69, wherein said tool is activated by an electronic cursor control device.

71. (New) The computer readable medium of claim 16, wherein said receiving user inputs of modifications directly to the graph comprises receiving a click-and-drag operation on the graph.

72. (New) A video editing application stored on a tangible computer readable medium, said video editing application comprising executable instructions, executable by an electronic processor, for playing a video clip with a speed effect, said video editing application comprising:

a) a set of instructions for displaying in a display area a graph that represents a content time of the video clip at each of a plurality of playback times of the video clip, wherein

the graph is for showing speed effects and receiving user inputs to define changes to the speed effects; and

b) a set of instructions for applying a speed effect that has been modified in response to the received user inputs to the video clip.

73. (New) The video editing application of claim 72 further comprising a set of instructions for receiving speed effects by a user clicking and dragging on the graph.

74. (New) The video editing application of claim 72 further comprising:

a) a set of instructions for receiving a selection of a point on the graph;

b) a set of instructions for displaying a line tangent to the graph at said point, wherein the line has a first end and a second end;

c) a set of instructions for receiving user input comprising a selection of a first end of said line and a drag operation on said first end;

c) a set of instructions for modifying a slope of the graph at the point in response to the drag operation on said first end; and

d) a set of instructions for modifying other portions of the graph to generate a smooth graph consistent with the modified slope of the graph at the point.

75. (New) The video editing application of claim 74, wherein the first end of the line and the second end of the line are represented by knobs.

76. (New) The video editing application of claim 72 further comprising a set of instructions for displaying a playback axis for the graph and a plurality of time markers on the playback axis, wherein:

a first adjacent pair of time markers is separated by a first separation;

a second adjacent pair of time markers is separated by a second separation;

the first separation and the second separation each represent the same amount of content time; and

the first separation and the second separation each represent a different amount of playback time.

77. (New) The video editing application of claim 76 further comprising a set of instructions to display the time markers that indicate playback times during which the video clip is playing forward in a first color and to display the time markers that indicate playback times during which the video clip is playing backward in a second color that is different from the first color.

78. (New) The video editing application of claim 76 further comprising a set of instructions for receiving user inputs of clicking and dragging on the time markers to define changes to the speed effects.

79. (New) The video editing application of claim 72 further comprising:

a set of instructions for, when the user clicks on a point on the graph, displaying an indicator box around the point, wherein the location of the box relative to the point indicates the content time that the point represents.

80. (New) The video editing application of claim 79 further comprising:

a) a set of instructions for moving the point along a content time-axis of the graph in response to a user drag operation; and

b) a set of instructions for moving the indicator box relative to the point to indicate the new content time of the point.

81. (New) The video editing application of claim 79 further comprising:

a) a set of instructions for moving the point along a playback time axis of the graph in response to a user drag operation; and

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b) a set of instructions for moving the indicator box along the playback time axis, while maintaining the position of the indicator box relative to the moving point.

82. (New) A video editing application stored on a computer readable medium, said video application comprising a user interface (UI), said UI comprising:

a) a first display area for displaying a composite video presentation; and

b) a second display area for displaying a graph that correlates content time to playback time, wherein said graph is modifiable by a user to modify the playback speed of the presentation in the first display area by modifying the relationship between the content time and the playback time.